

**COMBUSTION CHAMBER OF DIESEL ENGINE.****Publication number:** EP0105933**Publication date:** 1984-04-25**Inventor:** TSURUOKA SHINGO**Applicant:** HINO MOTORS LTD (JP)**Classification:**

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F02B23/06Q

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WO8303875 (A1)  
US4538566 (A1)  
EP0105933 (A4)  
EP0105933 (B2)

**Cited documents:**

DE2753341  
GB967126  
DE1451636

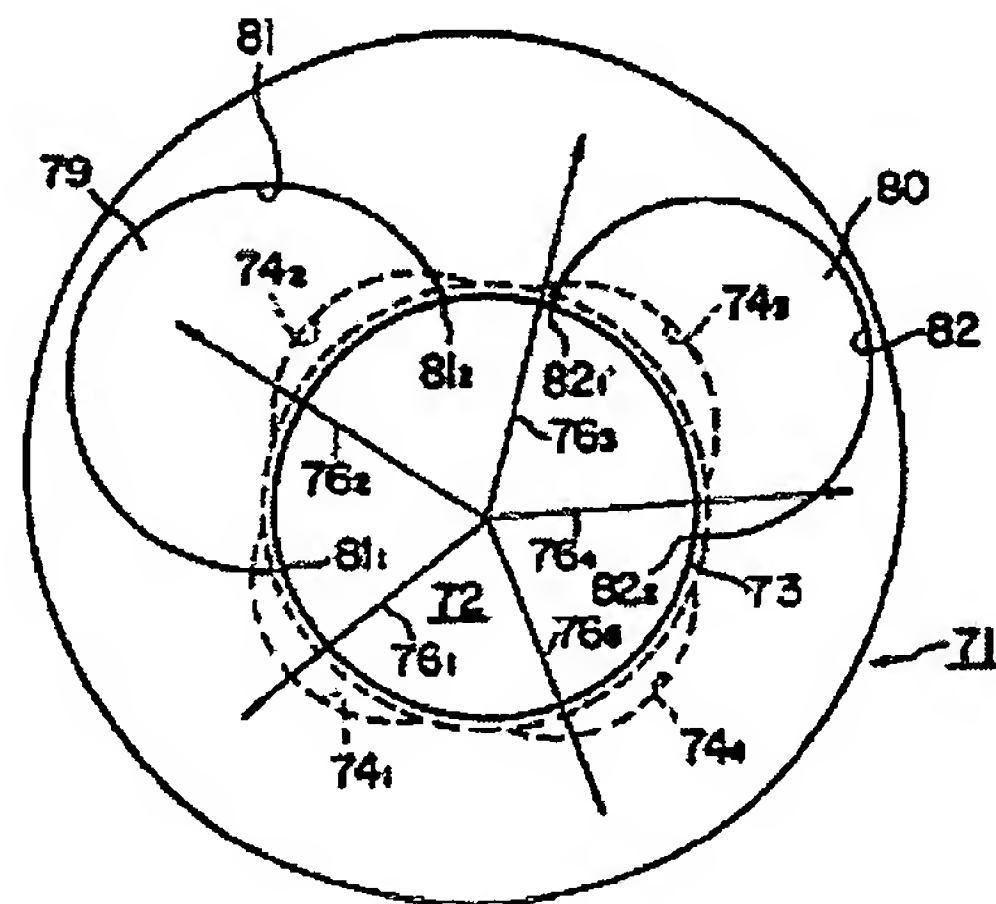
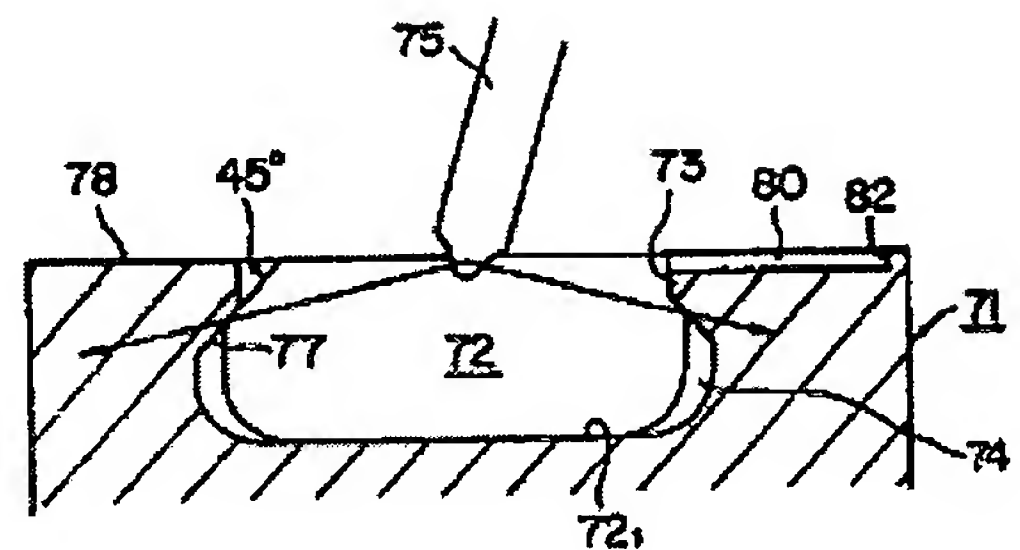
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Abstract not available for EP0105933

Abstract of corresponding document: **US4538566**

PCT No. PCT/JP83/00128 Sec. 371 Date Sep.  
28, 1983 Sec. 102(e) Date Sep. 28, 1983 PCT  
Filed Apr. 23, 1983 PCT Pub. No. WO83/03875

PCT Pub. Date Nov. 10, 1983. The present invention relates to a combustion chamber in a direct-injection diesel engine. The combustion chamber has a restriction at its inlet and a plurality of recesses in a side surface thereof. Atomized streams of fuel are injected at equal angular intervals from a fuel nozzle having injection ports which are one more than the recesses. The recesses make the piston top surface thinner, and would thermally destruct stepped portions of valve clearances defined in the piston for intake and exhaust valves. To prevent this, the stepped portions of the valve clearances are displaced off the recesses. The side surface of the combustion chamber with which the atomized fuel collides is inclined at an angle of 45 DEG with respect to the piston top surface. With the above construction, good and quiet fuel combustion can be achieved throughout the full range of engine rotation.



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# SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application number

EP 83 90 1232

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
X	DE-A-2 753 341 (DAIMLER-BENZ) * page 8, paragraphs 2,3,4; page 9; page 10, paragraph 1 *	1	F 02 B 23/06
A	GB-A- 967 126 (HINDLEY) * page 3, lines 101-119 *	8	
A	DE-A-1 451 636 (DAIMLER-BENZ) * figure 9; page 4, lines 2-5 *	1,6,7	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
			F 02 B
The supplementary search report has been drawn up for the claims attached hereto.			
Place of search THE HAGUE		Date of completion of the search 15-10-1984	Examiner JORIS J.C.
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

CLAIMS

1. A combustion chamber in a diesel engine,  
characterized in that the combustion chamber is defined  
in a top surface of a piston and has a plurality of  
5 recesses in a side surface, and atomized streams of fuel  
are injected from injection ports in a fuel nozzle toward  
different wall positions such as deep portions of the  
recesses, shallow portions of the recesses, and portions  
free of the recesses.

10 2. A combustion chamber in a diesel engine  
according to claim 1, wherein the number of the recesses  
is different from the number of the injection ports to  
inject atomized streams of fuel toward different wall  
positions.

15 3. A combustion chamber in a diesel engine  
according to claim 2, wherein said recesses are one more  
than said injection ports.

4. A combustion chamber in a diesel engine  
according to claim 2, wherein said recesses are one fewer  
20 than said injection ports.

5. A combustion chamber in a diesel engine  
according to any one of claims 1 through 4, including a  
restriction provided at an inlet at an upper end of said  
combustion chamber.

25 6. A combustion chamber in a diesel engine  
according to any one of claims 1 through 5, wherein said  
top surface of the piston has at least a valve clearance

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defined therein for an exhaust valve and having a stepped portion intersecting said restriction of the combustion chamber at areas free of said recesses in said side surface or at areas where said recesses are shallow.

5           7. A combustion chamber in a diesel engine according to claim 6, wherein said top surface of the piston has a valve clearance defined therein for an intake valve and having a stepped portion intersecting said restriction of the combustion chamber at areas free  
10 of said recesses in said side surface or at areas where said recesses are shallow.

          8. A combustion chamber in a diesel engine according to any one of claims 1 through 7, wherein said side surface of said combustion chamber has an inner wall  
15 surface against which atomized fuel injected from said fuel nozzle collides, said inner wall surface extending at an angle of 45° with respect to said top surface of the piston.

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